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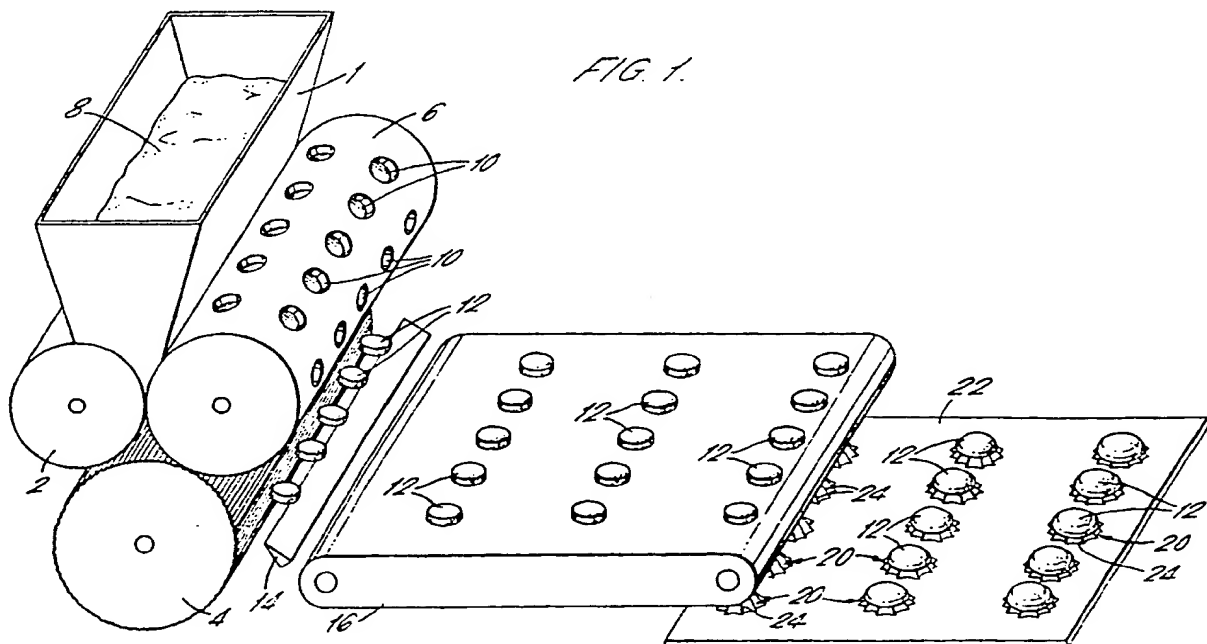
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(54) **Process for the manufacture of pastry cases**

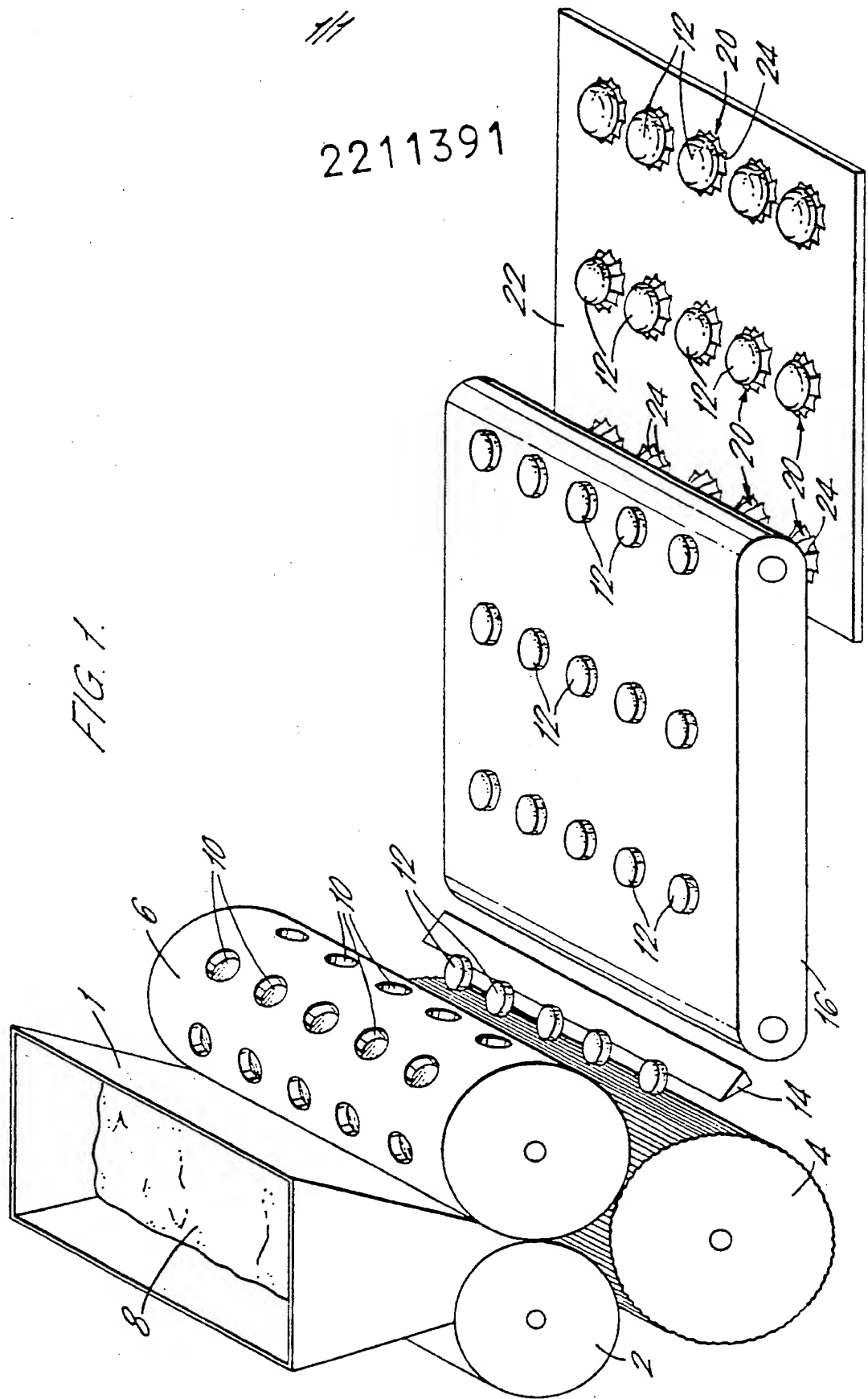
(57) A process for the manufacture of a pastry case comprises placing a lamina of pastry mix 12 onto an upwardly protruding convex mould 20, baking the pastry mix, and thereafter removing the formed pastry case from the mould, the consistency of the pastry mix being such that the pastry mix substantially adopts the shape of the mould either before or during baking and the pastry case retains that shape when removed from the mould. The invention also includes pastry cases produced by this process.



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FIG. 1.



PROCESS FOR THE MANUFACTURE OF PASTRY CASES

5           This invention relates to a process for the manufacture of pastry cases, in particular small pastry cases, and to pastry cases produced by that process.

10           Various methods are employed for the commercial manufacture of pastry cases which involve supporting the pastry mix in the interior of a mould during the baking process. The mould is usually a dish made of aluminium or tin foil and having the shape which the  
15           pastry case is required to adopt or a recess lined with such a dish. Occasionally the dish may be made of a thermally stable plastics material rather than foil. In this way, after baking the pastry case can be transported and sold without being removed from the  
20           dish. The dish provides protection for the pastry case and helps to prevent it being fractured or broken by minor knocks occurring during transit. More importantly, the dish provides a support for the pastry case since such cases, especially large ones,  
25           are often not sufficiently strong to be entirely self-supporting.

          One method which is employed commercially for producing such pastry cases is to dispense a measured  
30           amount of pastry mix into a dish of the desired shape and then to apply pressure to that mix inside the dish with a die set so that it is forced to spread evenly over the base and up the sides of the dish. The dish is then placed in an oven and the pastry mix baked for  
35           the appropriate length of time. This method lends itself readily to automation since dishes may easily

be passed by conveyor beneath a pastry mix dispenser, then beneath a reciprocating plunger and thence transported to an oven.

5 Another method is to pre-roll the pastry mix into a sheet, cut the desired shape of mix from that sheet, for example a disc, and then place that shape over the dish and press it down onto the base and against the sides. The mix can be pressed into the dish either manually or by machine.

10 One problem which occurs with both of these methods is that pockets of air may cause certain areas of the base of the pastry case to lift away from the dish during baking resulting in pastry cases with  
15 uneven bases which are unsightly when viewed from above. Occasionally, weights are applied during baking to the bases of pastry cases formed by these methods to prevent such unevenness.

20 Another disadvantage is that it is very difficult to remove the pastry case from the dish without breaking the pastry case. Thus, it is normally impractical for the pastry case to be removed from the dish before it is sold or before fillings are  
25 placed in the pastry case. This means that the pastry case will normally have to be served while still in its dish and this is often undesirable for aesthetic reasons.

30 This is particularly a problem where it is desired to make very small pastry cases for use, for example, as cocktail snacks. A preferred form of cocktail snack is sufficiently small to be consumed in one or two mouthfuls and constructed so that it can be  
35 picked up by the consumer in his fingers and placed directly into his mouth without the need to use

knives, forks or other implements. This means that the consumer's other hand is left free and can be used to hold a drink. It is, therefore, undesirable to provide pastry cases for cocktail snacks in the dishes in which they have been baked since the consumer must remove the pastry case from the dish before consumption - an operation which would require two hands. Of course, provided the pastry cases were sufficiently strong to be self-supporting, they could be removed from their dishes before being passed to the consumer but this can be a time consuming task, especially where large quantities of cocktail snacks are required.

Furthermore, difficulties are encountered when trying to produce such small pastry cases by the traditional manufacturing methods. With the first method, where pastry mix is dispensed into a foil tray and then pressure applied thereto, difficulties are encountered with accurately dispensing the small weight of pastry mix, for example only about 7 or 8 grams, which is required. With the second method, it is difficult to press the disc of pastry mix evenly into a small mould. Creases may form in the interior of the pastry case and pastry mix may overhang the edge of the mould in places leading to a need for a further processing step in which the top of the mould is trimmed.

Even if these problems are overcome, one is still left with a pastry case which is contained within a dish and which must be removed from that dish prior to use if it is to make a suitable cocktail snack.

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The present invention aims to provide a process

for the production of pastry cases without employing a dish and which is suitable for manufacturing very small pastry cases.

5           In accordance with the present invention there is provided a process for the manufacture of a pastry case comprising (a) placing a lamina of pastry mix onto an upwardly protruding convex mould, (b) baking the pastry mix and (c) thereafter removing the formed  
10   pastry case from the mould, the consistency of the pastry mix being such that the pastry mix substantially adopts the shape of the mould either before or during step (b) and the pastry case retains that shape when removed from the mould in step (c).

15           The term "pastry mix" as used herein refers to pastry mix provided in bound form, that is as a pre-formed mixture of the dry ingredients, fat and wet binding ingredients, ready for moulding to the desired  
20   shape and subsequent baking. The consistency of the pastry mix must be such that the lamina will bend under its own weight at room temperature, that is before baking, or at an elevated temperature achieved during baking, so as to adopt the shape of the mould.  
25   The pastry mix should also be sufficiently stiff that it will not flow and thereby cause its thickness to decrease as it flows and spreads out. The pastry mix may be an ordinary sweet or savoury shortcrust mix or mix for flaky or puffy pastry.

30           Suitable shortcrust pastry mixes are achieved by mixing together flour, fat with sugar or a mixture of sorbitol and lactose, and binding those ingredients with egg yolk or a mixture of egg yolk and water. The  
35   fat content plays an important part in ensuring that the pastry mix has the desired consistency and will

adopt the shape of the mould under the influence of gravity without the need to be pressed onto it. Preferably, the pastry mix will comprise at least 30 wt % fat and the fat content will usually be within the range of about 30 to 40 wt % fat.

If desired, a release agent may be applied to the surface of the convex mould prior to placing the lamina on that mould in order to facilitate removal of the pastry case from the mould after baking. For example, the mould may be greased or treated with silicone or PTFE.

The mould employed in the process may be provided as a single convex mould or as a set of convex moulds connected by a communal generally horizontal base from which they protrude upwardly. A single mould may if desired be provided with an inwardly or outwardly turned lip at its base to provide support for the mould structure.

Provided the consistency of the pastry mix is such that it will not flow significantly before or during baking, it is the thickness of the original lamina which will determine the thickness of the resultant pastry case and this thickness is preferably in the range 2mm to 8 mm, more preferably 3mm to 5 mm for small pastry cases for cocktail snacks.

Usually for pastry cases for cocktail snacks the weight of the lamina of pastry mix will be in the range 5 to 15 grams depending on the final size of the cocktail snack, preferably 7 to 8 grams. If desired, the lamina may be provided with a serrated edge which in turn will provide the finished pastry case with an attractive serrated edge provided the size of the

lamina compared with that of the mould is such that the serrated edge lies only part way down the mould rather than being pressed against a base surface on which the mould is supported or an out-turned lip of the mould.

The pastry cases made by the described processes may be formed in any desired shape by adjusting the shape of the mould. For example, the pastry cases may be in the shape of a hollow portion of a sphere, or a flat bottomed shell of circular, lenticular or oval plan. Where it is required to produce cocktail snacks, the pastry case will normally have a width which is less than 8 cm at its widest point, preferably less than 6 cm; and a height in the range 1.4 to 4 cm. If an embossed or indented pattern is provided on the convex side of the mould, this will result in the pastry case having an indented or embossed pattern on its interior. Such a feature may be desirable to catch the eye of a purchaser of unfilled pastry cases although it is unlikely to be seen by the final consumer of a pastry case since the case will normally be filled before consumption with a sweet or savoury filling which may obscure the pattern. Where embossings or indentations are very deep, they may be apparent both on the interior and the exterior of the pastry case but normally the thickness of the pastry case wall will be such that although the interior will adopt the shape of those indentations or embossings those patterns will not be transmitted to the exterior of the mould.

The invention will now be described by way of example with reference to the accompanying drawings in which:

FIGURE 1 is a drawing of an automated process



for the production of pastry cases according to the invention.

Referring to Figure 1, hopper 1 is mounted above  
5 three generally cylindrical rollers 2, 4, and 6,  
between which pastry mix is to be squeezed and  
rolled. The first roller 2 has the smallest diameter  
and a substantially smooth surface. Of the two larger  
10 rollers, the lower roller has a longitudinally fluted  
surface while the surface of the upper roller 6 is  
provided with longitudinal rows of indentations 10,  
the indentations having the shape of the laminae of  
pastry mix which it is desired to produce. A knife  
15 edge 14 is placed adjacent the lower roller 4 and  
mounted for reciprocating movement in order to cut  
pastry laminae from that roller 4. A conveyor 16 is  
provided beyond the knife edge 17 to transport the  
laminae until they are above a moving mould plate 22  
20 from which rows of substantially hemispherical convex  
moulds 20 protrude upwardly. Each of these moulds 20  
is provided with a pattern of indented longitudinally  
radiating grooves 24 and is of approximately 6 cm  
diameter at its base and 3 cm high.

25 A pastry mix is made by mixing together the  
following dry ingredients and fat in the stated  
proportions and then binding them with the egg yolk to  
provide a sweet pastry mix:

30 35 wt % fat  
16 wt % sugar  
44 wt % flour  
5 wt % egg yolk

35 The pastry mix 8 is placed in hopper 1 and fed from  
there to the three rollers 2, 4 and 6 between which it

is squeezed and rolled. Pastry mix lodges in indentations 10 of roller 6 to form the required laminae 12 of pastry mix which are of circular shape about 7 cm in diameter and 3 mm thick. These laminae are then carried on around roller 4 and cut from the roller by reciprocating knife edge 14. The laminae 12 then drop onto conveyor 16 along which they are carried. When a lamina reaches the end of the conveyor 16 it falls from the conveyor 16 onto a mould 20 of mould tray 22, the mould tray 22 being arranged to move beneath conveyor 16 at an appropriate speed so that each falling lamina 12 lands on the next empty mould 20. The lamina 12 then changes its shape under the influence of gravity until its whole area is supported by the mould 20, that is until it has adopted the shape of the mould 20 including being provided with an embossed pattern of longitudinally radiating furrows on its inner surface, the size of the lamina 12 also being such that there is a gap of about 1 cm between the edge of the moulded lamina 12 and the base of the mould tray 22. When each of the moulds 20 on the mould tray 22 has been covered by a lamina 12 the mould tray 22 is transported to an oven (not shown) in which the pastry mix is baked for about 10 minutes at about 170°C. After baking, the mould tray 22 is inverted and tapped to encourage the baked pastry cases to fall off. The pastry cases are then placed in suitable packaging ready for distribution and sale.

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CLAIMS:

- 5 1. A process for the manufacture of a pastry case comprising (a) placing a lamina of pastry mix onto an upwardly protruding convex mould, (b) baking the pastry mix and (c) thereafter removing the formed pastry case from the mould, the consistency of the  
10 pastry mix being such that the pastry mix substantially adopts the shape of the mould either before or during step (b) and the pastry case retains that shape when removed from the mould in step (c).
- 15 2. A process as claimed in claim 1 wherein the pastry mix adopts the shape of the mould before baking.
3. A process as claimed in claim 1 wherein the pastry mix adopts the shape of the mould during baking.
- 20 4. A process as claimed in any one of claims 1 to 3 wherein the pastry mix comprises fat, egg yolk, flour and sugar.
- 25 5. A process as claimed in any one of claims 1 to 3 wherein the pastry mix comprises fat, egg yolk, flour, sorbitol and lactose.
- 30 6. A process as claimed in claim 4 or claim 5 wherein the pastry mix further comprises water.
7. A process as claimed in any one of claims 1 to 6 wherein the pastry mix comprises at least 30% fat.
- 35 8. A process as claimed in claim 7 wherein the pastry mix comprises 30% to 40% fat.

9. A process as claimed in any one of claims 1 to 8 wherein the weight of the lamina of pastry mix is in the range 5 to 10 grams.

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10. A process as claimed in claim 9 wherein the weight of the lamina of pastry mix is in the range 4 to 8 grams.

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11. A process as claimed in any one of claims 1 to 10 in which a release agent is applied to the mould prior to step (a).

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12. A process as claimed in any one of claims 1 to 10 wherein the thickness of the lamina is in the range 2mm to 8mm.

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13. A process as claimed in claim 12 wherein the thickness of the lamina is in the range 3mm to 5mm.

14. A process as claimed in any one of claims 1 to 13 wherein the lamina has a serrated edge.

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15. A process as claimed in claim 1 substantially as described herein.

16. A pastry case produced by a process as claimed in any one of claims 1 to 15.

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17. A pastry case as claimed in claim 16 in the shape of a hollow portion of a sphere, or a flat bottomed shell of circular, lenticular or oval plan.

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18. A pastry case as claimed in claim 16 or claim 17 having a width which is less than 8 cm at its widest point.

19. A pastry case as claimed in claim 18 having a width which is less than 6 cm at its widest point.

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20. A pastry case as claimed in any one of claims 16 to 19 having a height in the range 1.5 to 4 cm.

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21. A pastry case as claimed in any one of claims 16 to 20 having an indented or embossed pattern on its inner surface which has been provided by embossings or indentations on the mould.

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22. A pastry case as claimed in any one of claims 16 to 21 substantially as described herein.

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